M0370043
TASK 2872
cc: Tom

0002

ENERGY FUELS RESOURCES CORPORATION

January 31, 2008

Mr. Paul Baker
Minerals Program Manager
Utah Division of Oil, Gas and Mining
P.O. Box 145801
Salt Lake City, Utah 84114-5801

RECEIVED
FEB 04 2009
DIV. OF OIL, GAS & MINING

Transmittal: Response to December 4, 2008 Comments
Energy Queen Mine, M037043, San Juan County

Dear Paul:

Enclosed are two copies of a redline and strikeout document of the revised text to our August 2008 Amendment. The submittals also include two revised figures and a revised incremental surety estimate. The majority of the revisions have been made in response to your review letter of December 4, 2008; however, a few minor revisions were made to correct small errors and update the current permitting situation with other agencies. A summary of the revisions follows.

Response to Comment 1, Figure SWWWP-3 (tm): The referenced figure (Surface Drainage Map) has been updated to include more detail and is submitted herein. The primary storm water discharge point for the mine site is located in the south-central portion of the site (Collection Point #1). There is also an emergency overflow at the Sedimentation Pond (Collection Point #3) and an upstream sampling point (Collection Point #2). The majority of the storm water within the treatment area in Section 5 is routed to the existing and future lined ponds, although some off-site sheet flow occurs over revegetated perimeter areas.

The treated water discharge point is located at the ephemeral drainage immediately west of the northwest corner of the Untreated Water Pond. A riprapped emergency overflow from the same pond is located just downstream from the treated water discharge point. Samples of treated water will be collected in accordance with the requirements of the approved surface water discharge permit.

Response to Comment 2, 106.1 (whw): An estimated mine development schedule and maximum ore and waste production rates have been added to the Operation Plan. The schedule is not tied to specific dates, as mine development is dependent on the price of

uranium increasing above the current spot price of $51/pound. Based on current and projected world-wide production and consumption rates, we believe that this will occur within the next several years.

Response to Comment 3, 106.2 (whw): Text has been added to the Operation Plan discussing the maximum storage capacity of the current waste rock area (WRA) and the proposed ore pad. Additional clarification regarding estimated capacities follows.

The maximum capacity of the proposed ore pad with two heaped piles (i.e., north and south of the central drainage and access) would be about 30,000 tons. However, the pad was not designed for maximum storage, but rather to contain multiple ore piles of different grades from multiple properties with different royalty arrangements. For example, six segregated piles would have a maximum storage capacity of about 10,000 tons. For bonding purposes, Energy Fuels proposes to limit its ore storage to 5,000 tons. Storage beyond that amount would require additional bonding.

Although waste rock disposal is not part of the current amendment, we have added additional language in the development plan describing current waste rock disposal capacity as requested. The approved mine plan calls for the disposal of waste rock in both the San Juan (Section 5) and Superior (Section 6) WRAs. The majority of the approximately 96,000 tons of waste rock mined by Union Carbide was placed in the Superior WRA, which is located in the southwest corner of the site. This is a relatively good location for the WRA, as it is outside of the ephemeral drainage and is partially hidden from the highway. The waste that was mined from Section 5 (a few thousand tons) was placed in the San Juan WRA. The San Juan WRA is located in a less desirable area as it encroaches on the ephemeral drainage and is in close proximity to Highway 46. Energy Fuels would prefer not to utilize this WRA in the future and has presented plans to the Division for removing the existing waste rock from the drainage and using this material to construct the expanded ore pad.

The Superior WRA has sufficient capacity to hold an additional 200,000 tons of waste, which would contain the maximum amount of waste produced over the initial 32 months of the development schedule. The mine plan is approved for 35 acres of surface disturbance, which allows for up to 9.4 acres of additional mine expansion over the currently proposed 25.6 acres of surface disturbance. Energy Fuels plans to submit a second amendment for expansion of the WRA once the existing underground workings are accessed and more detailed mine plans can be developed. Based on the site topography, the Superior WRA can be expanded to the west and north without impacting the ephemeral drainage.

Response to Comment 4, 110.4 (whw): Under the forfeiture scenario presented by the Division, the ore would be used to backfill the mine shaft. The incremental bond has been adjusted based on that scenario. Alternately, the ore could be placed within the WRA and covered with a minimum of 4 feet of combined waste and topsoil. These revisions are addressed in both the reclamation plan and surety calculation.

Response to Comment 5, 110.5 (lk): Based on recent consultations with the landowners (Markle Ranch Holdings, Inc. and San Juan County), Energy Fuels is proposing to retain the main access road to the Markle property (Section 6), the access road to Monitoring Well MW-4, and the main access road to the San Juan County property (Section 5). The access road to MW-4 provides the landowner with a convenient access across the ephemeral drainage. Roads are addressed in the text under Rule 105 (Maps, drawings, and Photographs). Figure 7 has been revised to delineate those roads that will be left for the post-mining land use. The current bond includes reclamation of all roads; a final determination as to which roads will be left in place will be made at the time of reclamation in consultation with the landowners and the Division.

Response to Comment 6, 110.5 (lk): The text has been modified in accordance with your recommendation.

Response to Comment 7, 110.5 (lk): The revised seed mix has been incorporated into the Reclamation Plan per your request. One of the landowners asked that the Paiute orchard grass be eliminated from the seed mix. Based on follow-up discussions with the Division and the owner, we replaced the 0.5 pound/acre of orchard grass with 1.0 pound/acre of thickspike wheatgrass.

Response to Comment 8, 113 (whw): Additional details for those items not previously addressed in the current surety bond have been added to the incremental bond calculation per your request. Costs for the on-site disposal of 5,000 tons of ore, as previously discussed under the response to comment 3 (above), have also been added. While revising the bond calculation, we discovered that the costs for disposal of the water treatment precipitate had been overestimated by including the purchase of cover material. Given that the waste rock cover is already present on site, the estimated cost for this task was revised to include only equipment and operator charges. We also replaced the 2004 unit prices for plugging wells with a 2008 source. This also resulted in a lower cost estimate because the 2004 source had assumed a more conservative abandonment procedure (full grouting of the entire well with portland cement), which is not required under state regulations.

We respectfully disagree with the need to include costs for earthwork (i.e., backfilling, grading, haulage) and revegetation in the incremental surety estimate. Per previous discussions with Division personnel, we have limited the incremental surety estimate to only those items that were not included in the current reclamation bond. The current bond estimate is for 35 acres of surface disturbance and the proposed amendment includes only 25.6 acres of total surface disturbance for the site. The current bond includes regrading of 6.6 acres of water treatment ponds, 11.2 acres of waste dumps, and 17.2 acres of plant area and roads plus reseeding of 35 acres of surface disturbance. Given the circumstances, we believe that the current bond amount of $265,200 plus the proposed incremental bond of $54,600 provide adequate protection to the State of Utah in the event of forfeiture.

Given that the current bond is scheduled for reevaluation in 2010, we would prefer to provide a new site-wide surety estimate at that time. Depending on our development schedule, this effort may also include an amendment to expand the Superior WRA.

Please call me (303-974-2146) or Zach Rogers (303-974-2151) if you have any questions or need additional information. We look forward to completing this permitting action and reopening the mine.

Sincerely,

Frank Filas, P.E.
Environmental Manager

Cc: Jeff Osborn, Zach Rogers, Dick White (Energy Fuels)

ENERGY QUEEN MINE

APPLICATION FOR MINERAL MINE PLAN AMENDMENT PERMIT No. M/037/043

SAN JUAN COUNTY, UTAH

Submitted to:

UTAH DIVISION OF OIL, GAS AND MINING
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114

Submitted by:

ENERGY FUELS RESOURCES CORPORATION
31525 Highway 90
Nucla, Colorado 81424

Revised January 2009

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ENERGY QUEEN MINE
SAN JUAN COUNTY, UTAH

APPLICATION FOR MINERAL MINE PLAN AMENDMENT
REVISED JANUARY 2009

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Tables

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Figures (included in Section II)

Appendices

I. General Information (Rule R647-4-104)

The Energy Queen Mine, formerly the Hecla Shaft, is a uranium-vanadium mine developed by Union Carbide in the late 1970s and early 1980s. The mine stopped production in 1982 due to depressed uranium prices but continued dewatering and water treatment though the end of 1993. The mine permit was transferred to Umetco Minerals Corporation in 1985. Dewatering of the mine ceased in December 1993 and the mine was allowed to flood. The mine permit was transferred to Energy Fuels Nuclear, Inc. in 1994 and subsequently to International Uranium Corporation (IUC) (now Denison Mines [USA] Corporation [Denison]) in 1997. The mine site has not been reclaimed at this time. The existing mine permit was transferred to Energy Fuels Resources Corporation (Energy Fuels) on February 25, 2008. Energy Fuels has posted a reclamation bond in the amount of $265,200 with the Utah Division of Oil, Gas and Mining (DOGM).

Energy Fuels plans to rehabilitate and upgrade the Energy Queen Mine surface facilities and underground workings in preparation for further developing the mine and producing uranium and vanadium ore. Rehabilitation of the majority of the surface facilities will be conducted on existing structures and features and the operation, impact, and reclamation of these facilities will remain unchanged from the existing, approved permit. Existing facilities that will be rehabilitated without significant modifications include the mine shaft and head frame, ventilation shaft, mine office and dry, and compressor building. The existing mine roads and waste rock disposal area will remain unchanged except for minor surface drainage improvements within the existing surface disturbance boundary.

Some of the surface facilities will be modified to allow us to operate the mine more efficiently and in an environmentally sound manner. These improvements, which are described in this amendment, will be made to the mine water treatment system and ore pad. The current amendment also documents and clarifies the existing groundwater monitoring network on site.

Energy Fuels anticipates that further modifications will be necessary in the future provided that market conditions remain favorable. These future modifications may include expansion of the waste rock disposal area, identification of the locations of new ventilation shafts, and construction of additional surface facilities. Energy Fuels cannot predict the need and location for future modifications until additional work is done on site and the underground workings are accessible. General information regarding Energy Fuels and the mine property follows.

I.A Mine Name

Energy Queen Mine (formerly the Hecla Shaft)

I. B Operator Information

Company:	Energy Fuels Resources Corporation
Authorized Officer:	Stephen P. Antony
Company Officers:	George E. L. Glasier, President & Chief Executive Officer Stephen P. Antony, Executive Vice President & Chief Operating Officer Gordon Phair, Chief Financial Officer
Business License #:	6325423-0151 (Corporation)
Registered Agent:	Donn Pillmore, DMP Consulting, LLC 800 S. Vermillion, Kanab, UT 84741 Phone: (435) 644-3125, Fax: (435) 644-3125 E-mail: dpillmore@energyfuels.com

I.C Contact Information

Corporate

Frank Filas, P.E., Environmental Manager
44 Union Blvd., Suite 600, Lakewood, CO 80228
Main Phone: (303) 974-2140, Direct Phone: (303) 974-2146
Fax: (303) 974-2141, E-mail: ffilas@energyfuels.com

Local

Bruce Norquist, P.E., Chief Mine Engineer or
Dick White, P.G., Vice President Exploration
31525 Highway 90, P.O. Box 888, Nucla, CO 81424
Phone: (970) 864-7775, Deleted: , ext. 11
Fax: (970) 864-7776, E-mail: b.norquist@energyfuels.com, d.white@energyfuels.com

I.D Location

The Energy Queen Mine is located on portions of Sections 5, 6, and 7, Township 29 South, Range 24 East, Salt Lake Base and Meridian, situated in San Juan County, Utah and containing approximately 714 acres. Refer to Figures 1 and 2 in Section II for the Site Location Map and Property Map, respectively. The mine surface facilities, where all surface disturbance associated with past mining operations have taken place and where current additional surface disturbance is proposed, is located in the NW ¼ of Section 5 and the NE ¼ of Section 6.

I.E Surface Rights

The mine surface facilities are located on lands owned by a private party (Sections 6 and 7) and San Juan County (Section 5). The private land surface rights, consisting of 701.93 acres in Sections 6 and 7, are held by Markle Ranch Holdings, Inc. (Markle) and leased to Energy Fuels. The San Juan County land, consisting of 12.06 acres in Section 5, is leased from San Juan County by Denison and the surface area is subleased to Energy Fuels. Contact information for Markle, San Juan County, and Denison follows.

Dorothy Markle, President
Markle Ranch Holdings, LLC
25 Apache Circle
Moab, Utah 84532

Rick Bailey, County Administrator
San Juan County
P.O. Box 9
Monticello, UT 84535-0009

Harold Roberts, Executive Vice President- U.S. Operations
Denison Mines (USA) Corporation
Independence Plaza, Suite 950
1050 Seventeenth Street
Denver, CO 80265

I.F Mineral Rights

The mineral rights on the private land in Sections 6 and 7 are held by Superior Uranium, Inc. and leased by Energy Fuels. The mineral rights on the San Juan County land in Section 5 are held by Denison (see contact information above) through a mineral lease agreement with San Juan County. Energy Fuels has an agreement with Denison to utilize the existing workings for some mining activities, but does not hold mineral rights to this land. Contact information for Superior Uranium, Inc. follows.

John W. Odgers, President
Superior Uranium Inc.
25 Apache Circle
Moab, Utah 84532

II. Maps, Drawings, and Photographs (Rule R647-4-105)

II.A Figures

The following figures are provided at the end of this section. These figures supersede Figures 1 through 5 in the approved 1978 Mining and Reclamation Plan.

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Figure 1 Site Location Map
Figure 2 Property Map
Figure 3 Surface Ownership Map
Figure 4 Existing Surface Facilities Map
Figure 5 Proposed Surface Facilities Map
Figure 6 Surface Drainage Map
Figure 7 Reclamation Contour Map (Revised)
Figure 8 Existing Underground Development Map

II.A.1 Mine Location and Property

The mine is located south of Moab and approximately 4 miles west of La Sal, Utah as shown on Figure 1. Figure 2 delineates the surface property controlled by Energy Fuels through lease agreements. The surface map also represents the affected area for the mine, as underground operations may extend to the limits of the Superior lease in Sections 6 and 7. Figure 3 shows the current surface ownership for the mine property and adjacent parcels.

II.A.2 Existing Facilities

Existing surface features and areas of disturbance are shown on Figure 4. Existing surface features include the mine shaft and head frame, mine office and dry, loading area, air compressor building, mine water treatment building and ponds, an ore pad, a ventilation shaft, two waste rock disposal areas, and ten groundwater monitoring wells.

The mine is currently permitted and bonded for 29.3 acres of surface disturbance. The disturbed area boundary established in 2003 is shown on Figure 4 with a solid line. The disturbed area within the solid line encompasses 23.5 acres. There is currently a total of 1.15 acres of surface disturbance outside of the 2003 disturbed area boundary. This area, which is delineated with a dashed line, includes a small waste rock disposal area and a monitoring well pad and associated access road. These features are discussed in more detail in Sections III.B and IV.C, respectively. The following table summarizes acreages of existing and proposed surface disturbances at the Energy Queen Mine.

Table 1
Surface Disturbance Area

Area Identification	Existing Disturbance (acres)	Proposed Disturbance (acres)
Existing Disturbed Area (2003 map)	23.53	0
Small Waste Rock Area (to be reclaimed)	0.66	0
Monitoring Well Site and Associated Road	0.49	0
Treatment Pond Spillway	0	0.07
Ore Pad Sedimentation Pond	0	0.37
Ore Pad Topsoil Stockpile (TS-3)	0	0.44
Total	**24.68**	**0.88**
	25.56	

II.A.3 Proposed Facilities

The 0.88 acre of surface disturbance that Energy Fuels proposes to add to the existing disturbed area (see column 2 of Table 1) is for construction of a sedimentation pond, topsoil stockpile (TS-3), and an emergency spillway. These features are delineated on Figure 5 and are associated with the expansion and upgrading of the ore stockpile pad and the construction of a new lined water treatment pond to replace the existing unlined ponds. The sedimentation pond will be located west of the ore pad and north of the existing ventilation shaft while Topsoil Stockpile TS-3 will be located southwest of the ore pad. The emergency spillway will connect the new "Untreated Water Pond" with the ephemeral drainage that crosses through the site.

Figure 4 also shows the modifications that are proposed within the existing disturbed area. These modifications include:

- construction of a new double-lined Untreated Water Pond and expansion of the existing water treatment plant including installation of a concrete filter pad and topsoil stockpile (TS-2); and,
- expansion of the existing ore pad and elimination of the existing "collection area" located southwest of the current stockpile pad.

In addition, Figure 4 delineates the current groundwater monitoring system on site. This system includes Wells HMW-1, 2, 3, 4, and 5 around the water treatment area, Wells MW-1, 2B, 3 and 5 around the ore pad, and Well MW-4 south of the ephemeral drainage.

Surface drainage structures, including ditches, swales, and culverts will be installed as necessary throughout the site to provide proper stormwater drainage. These structures will be installed within the existing surface disturbance areas. Refer to Figure 6 for the location of surface drainage structures.

II.A.4 Reclaimed Surface

The proposed reclamation contours for the water treatment area and ore pad area and roads that will be reclaimed are presented in Figure 7. These disturbed areas will be regraded to be free draining and to blend in with the surrounding undisturbed terrain. Reclamation details are provided in Section V, Reclamation Plan.

As shown in the top left corner of Figure 7, the water treatment area will be regraded to slope gradually to the west toward the ephemeral drainage. The small waste rock disposal area located north of the water treatment area will be removed in conjunction with proposed ore pad construction and the area will be regraded to its approximate original contour.

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As shown in the bottom left corner of Figure 7, the reclaimed configuration of the ore pad area will be similar to the operational configuration with surface runoff directed to the west. The edges of the ore pad will be graded to tie in with the surrounding undisturbed terrain. Both the topsoil stockpile (TS-3) and the sedimentation pond will be removed and these areas will be restored to their approximate original contour.

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The ten monitoring wells will be abandoned in accordance with state regulations. Abandonment costs for these wells are addressed in Section VII, Surety. The existing water well and associated water rights are owned by the landowner and will remain for the post-mining land use. The landowners have identified the access road to Monitoring Well MW-4 and the main access roads to both Section 5 and Section 6 as roads that they would like to retain for the post-mining land use. These roads are identified on the right side of Figure 7. The current surety includes costs for reclamation of all on-site roads. A final determination as to which roads will be left in place will be made at the time of reclamation in consultation with the landowners and DOGM. The access road to Monitoring Well MW-4, if reclaimed, will be restored to its approximate original contour including removal of the culvert within the ephemeral drainage.

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Deleted: and the associated pad area will likely also be kept for the post-mining land use; however, a determination regarding its long-term utility has not been finalized at this time. Energy Fuels has included reclamation costs for the road and pad in the incremental bond estimate presented in Section VII. This estimate assumes that the disturbed area will be returned to its approximate

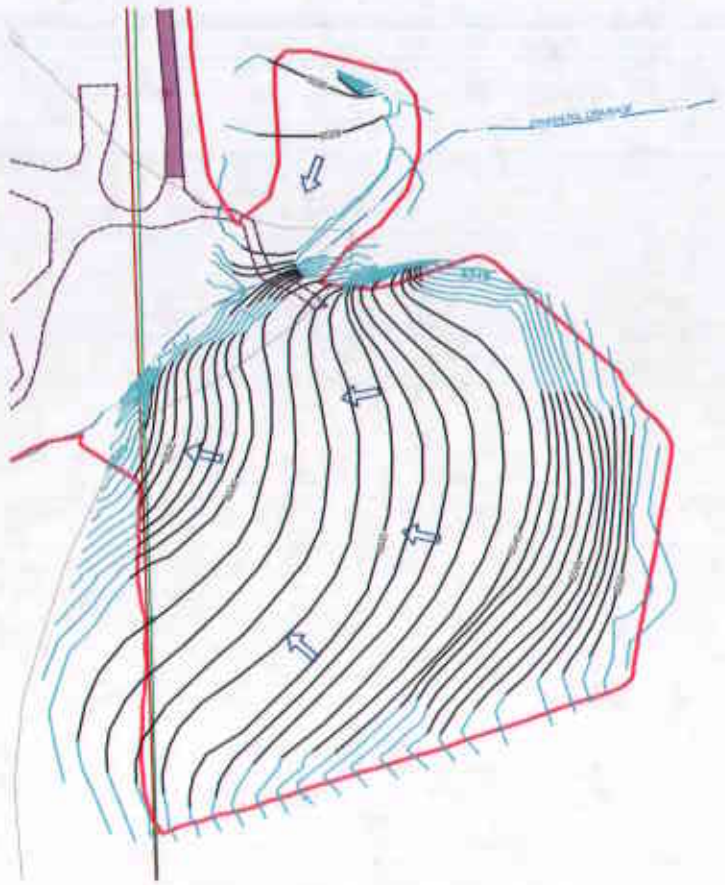
II. A.5 Mine Development

Figure 8 shows the current extent of underground mine development. The mine workings are currently flooded and contain approximately 10 million gallons of water. Once the mine is

dewatered, Energy Fuels plans to extend the existing drifts further to the west and south toward ore zones that have been identified by exploration drilling.

II.B Photographs

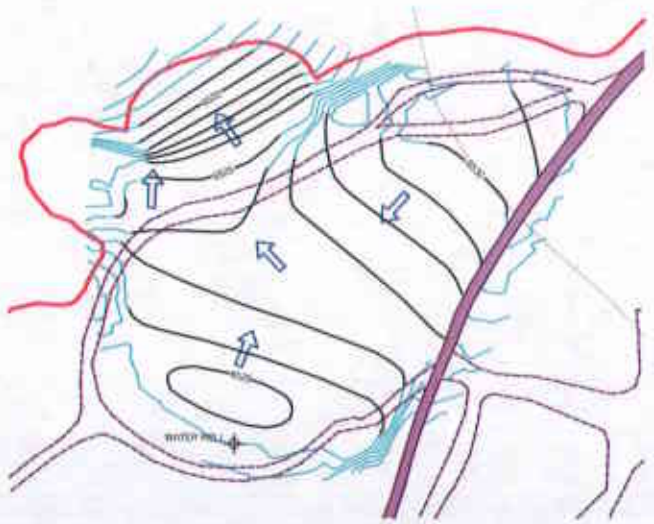
A photographic log is provided in Appendix A. All photographs depict existing conditions at the mine site as of the date indicated on the log. Also included in the photographic log are the orientation and brief description of each photograph.



WATER TREATMENT AREA

100 50 0 100 200

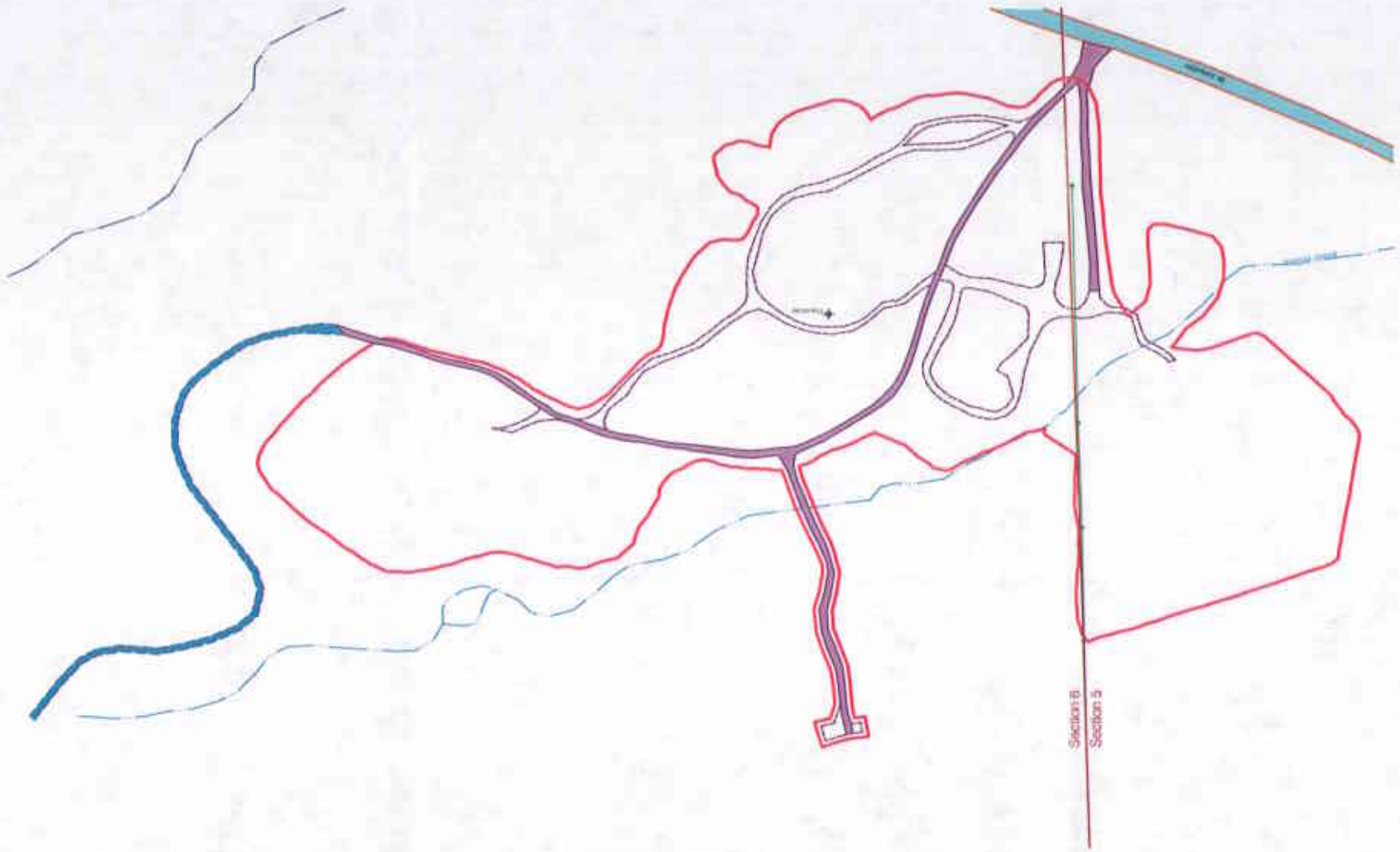
SCALE IN FEET



ORE PAD AREA

100 50 0 100 200

SCALE IN FEET



SITE ROADS

150 75 0 150 300

SCALE IN FEET

True North

13°

MN

LEGEND

- Roads to Remain
- 4x4 Roads (to remain)
- Reclaimed Roads
- Water Well
- Power Line and Pole
- Proposed Disturbed Area Boundary
- Existing Contour
- Reclamation Contour
- Ephemeral Drainage
- Surface Run-off Direction

Energy Fuels Resources

FIGURE 7

ENERGY QUEEN MINE

RECLAMATION CONTOUR MAP

Scale	Updated	Drawn By
varies	December 23, 2008	ZTR

N:\Environmental\Mine Permitting\Energy Queen\Amendment to DOGM Permit\Figures\energy queen amendment figure 7 rev2

III. Operation Plan (Rule 647-4-106)

Operations at the Energy Queen Mine will not differ significantly from previous mining operations , conducted under the current permit, with two exceptions. The exceptions include the water treatment system and ore pad components, which are addressed below. Additional details regarding the groundwater monitoring system are also provided.. These modifications are mostly additive and only a few minor strikeouts are required in the text of the approved 1978 Mining and Reclamation Plan (see Appendix B).

The following schedule is anticipated as the fastest practical scenario in which the Energy Queen Mine may resume production.

Table 2
Estimated Mine Development Schedule

Description	Time to Complete	Schedule
Construction of Water Treatment Plant and Ponds and Rehabilitation of Surface Facilities	3 to 6 months	3 to 6 months
Dewatering of Mine Shaft and Workings	2 to 6 months	5 to 12 months
Rehabilitation of Mine Workings	6 months	1 to 1.5 years
Initial Production (100 tpd)	6 months	1.5 to 2 years
Full Production (200 tpd)	8 to 13 years	10 to 15 years

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As shown in the above schedule, it is anticipated that initial production of ore from the Energy Queen Mine will not occur until at least 1.5 years following the start of construction and rehabilitation activities. At that time, its estimated initial production will commence at a maximum rate of 100 ton/day followed by full production at a maximum rate of 200 ton/day of ore. The estimated waste rock to ore ratio ranges from 2 to 3.5 tons of waste rock per ton of ore, depending on the level of development necessary to access the various ore zones. The mine will run up to three shifts per day, five days per week. The estimated maximum production during the first six months following mine rehabilitation (1.5 to 2 years after start of construction) is 12,500 tons of ore and 34,400 tons of waste rock. At full production, the estimated maximum annual production is 50,000 tons of ore and 137,500 tons of waste rock.

The waste rock area (WRA) has a maximum incremental storage capacity within the current footprint of 146,000 cubic yards, equivalent to approximately 200,000 tons of waste rock. The

approved reclamation plan calls for reclamation of the WRA slopes to 2 horizontal to 1 vertical (2:1 slope). Energy Fuels finds that slopes of 3:1 or less steep significantly increase the chances for successful revegetation; accordingly, the capacity calculation is based on building the WRA within the current footprint and reclaiming the slopes to 3:1 or less steep on all sides. Based on the above development schedule, the existing WRA will have adequate storage capacity for a minimum of 32 months following the start of construction. Following additional development of the mine, Energy Fuels will be able to more accurately determine the mining schedule and waste rock storage needs. There is currently open space available to the west and north of the existing WRA for future expansion.

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III.A Water Treatment System

The Energy Queen Mine is currently flooded and approximately 10 million gallons of water will need to be pumped and treated to gain access to the underground workings. Dewatering operations will continue at an estimated average rate of 65 gpm during mine rehabilitation and initial development. As the underground mine area expands, the average dewatering rate is expected to gradually increase. Energy Fuels has obtained a Utah Pollutant Discharge Elimination System (UPDES) Water Discharge Permit (No. UT0025712) from the Utah Department of Environmental Quality (UDEQ), Division of Water Quality (DWQ). The mine water will need to be treated to reduce suspended solids and radium^{226} activity levels to below the discharge standard stipulated in the permit. Sampling and analysis of treated discharge water will be conducted on a monthly basis in accordance with the discharge permit (see Appendix C). The existing water treatment system at the Energy Queen Mine, used during previous mine dewatering operations in the 1980's and 1990's, is in poor condition and will be removed and replaced with a larger system capable of treating up to 200 gpm. In addition to the water treatment components, this system will include a new double-lined pond and a filter pad for collecting precipitate from the treatment process.

The mine water will be pumped into the proposed double-lined Untreated Water Pond where suspended solids will be allowed to settle out of solution prior to treatment. The mine water will then be pumped from the pond to the treatment plant where the water will be treated to remove radium. The treated water will flow into the Treated Water Tank and then flow via gravity into the adjacent dry wash, in accordance with the discharge permit. An existing lined pond, located east of the treatment plant, will serve as a Contingency Pond in the event of an upset condition or need for repairs. Geosynthetic fabric bladders, located west of the treatment plant on the Filter Pad, will receive backwash water and precipitate from the multimedia filters contained in the treatment plant. These bladders will be enclosed within a curbed concrete pad that drains back

into the Untreated Water Pond. An overview of the water treatment system is provided below and in the "Conceptual Plan for Water Treatment System at the Energy Queen Mine" that was approved by DWQ on July 23, 2008. This plan and the DWQ approval letter are included as Appendix D to this amendment.

Available topsoil and growth media will be salvaged from the treatment plant and pond area prior to construction. This soil will be stockpiled in the southeast corner of the existing disturbed area (see TS-2 on Figure 4). The existing water treatment plant and ponds were constructed within an area that was extensively disturbed by historic gravel and quarry operations. Accordingly, the volume of topsoil that can be salvaged is very limited and most of the material that will be stripped consists of subsoil that was exposed by previous quarry operations and that currently supports some vegetative growth. Energy Fuels will attempt to salvage as much of the topsoil and growth material that can practically be recovered from this area. For planning purposes, it is estimated that 2 acres will be disturbed by construction activities and that an average of 6 inches of topsoil and growth media can be salvaged from this area. This results in an estimated 1,600 cubic yards (cy) of topsoil and growth media that will be stripped and placed in Topsoil Stockpile TS-2. This stockpile, as shown on Figure 4 will have a capacity of about 2,000 cy based on its areal footprint, an 8-foot height, and side slopes of 3 horizontal to 1 vertical (3H:1V). This stockpile will be seeded and encircled by a small (i.e., one-foot high) earthen berm to minimize loss of stockpiled topsoil by wind and water erosion.

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III.A.1 Water Treatment Plant

The proposed treatment system is designed to treat mine water at rates up to 200 gallons per minute (gpm). Two different treatment systems are being considered for use at the Energy Queen Mine. The first system under consideration is a barium chloride system similar to the water treatment system used by Umetco at the Energy Queen Mine in the early 1990's. Adding barium chloride to precipitate radium is the traditional water treatment method employed at uranium mines. Energy Fuels is also looking at the possibility of using a zeolite treatment system. Zeolite absorption systems are currently being used by some potable water providers to meet radium^{226} drinking water standards. The water treatment components for both options are very similar in function and size. Current plans are to install the barium chloride system initially, but provide sufficient flexibility to convert to the zeolite system should later test results be favorable.

The upgraded Treatment Plant will be housed in the existing treatment building; however, this building will need to be expanded to accommodate the new system. Expansion will occur at the

north end of the building and increase the building footprint from 280 square feet to 755 square feet. The building will sit on a 6-inch concrete pad with a concrete perimeter curb. Drainage within the building will be directed to the south to an existing concrete sump that drains to the Contingency Pond. The proposed expansion will be the same for either treatment system as space and equipment requirements for both systems are similar. Refer to the treatment system conceptual plan in Appendix D and the construction drawings in Appendix E for additional details.

After adding barium chloride to the mine water, the water will be directed through a series of multimedia filters that will remove the precipitate (i.e., radium-bearing barium sulfate). The filtered water will then flow into the Treated Water Tank. This tank will provide water (1) to back flush the multimedia filters that are used to remove precipitate from the treated water and (2) for general non-potable uses on site such as washing equipment and dust suppression. Water rights have been applied for both surface and underground use of this water in accordance with new water right regulations (see Appendix F). Appendix F also includes the existing water right for the on-site water well.

A Chemical Storage and Handling Plan has been developed for the water treatment facility based on the chemicals to be used in the barium chloride treatment systems, as this is the preferred design at this time. This plan summarizes maximum chemical quantities, characteristics, potential health and environmental hazards, handling guidelines, appropriate first aid measures, containment measures, maintenance requirements, spill response measures, and spill notification measures for each chemical involved in the treatment system. This plan, which is included as Appendix G, will be updated whenever the presence of additional chemicals or design changes warrant.

III.A.2 Untreated Water Pond

The Untreated Water Pond will be constructed southwest of the treatment plant. This pond will have a capacity of approximately 1.5 million gallons, not including 2 feet of freeboard. This pond will provide surge and storage capacity for water coming out of the mine and allow for settlement of suspended solids before the water is pumped to the Treatment Plant. The pond will be able to contain approximately 16 days of mine water, based on a 65 gpm historical pumping rate, in the event that the treatment plant is temporarily off-line. The Untreated Water Pond will be double-lined with 60-mil HDPE liners, or equivalent low-permeable liners, and equipped with a leak detection system. Refer to Appendix E for pond design plans and specifications.

III.A.3 Filter Pad

Geosynthetic fabric bladders, such as Geotubes®, will be placed directly on, or within roll-offs located on, the concrete Filter Pad. The Filter Pad is curbed and drains into the Untreated Water Pond. The Filter Pad will be constructed adjacent to the northeast corner of the Untreated Water Pond. The purpose of the geosynthetic fabric bladders will be to collect and dewater sediment and precipitate-laden backwash from the multimedia filters in the Treatment Plant. Water drainage from the bladders will drain directly into the Untreated Water Pond. The Filter Pad will be designed to accommodate a minimum of three bladders. This will provide sufficient space for use of bladders while previously filled bladders are allowed to dewater. Additional information regarding the proposed bladders is provided in the Conceptual Plan presented in Appendix D.

Depending on levels of radium and uranium present in the precipitate and availability of options at the time of disposal, the dewatered precipitate will be sent to a mill for uranium recovery, disposed of as waste according to applicable regulations, or disposed of on-site, as appropriate. Precipitate located in the former settling pond (the existing lined pond) was sampled and analyzed for radium and uranium and tested for metals using the Toxicity Characteristic Leach Procedure (TCLP). The results of these analyses and testing are provided at the end of Appendix D. Analysis of the precipitate indicates that the radium (<15 pCi/g) and uranium (<500 mg/kg) levels in the existing precipitate are within the range of Naturally Occurring Radioactive Materials (NORM) levels and, therefore, exempt from Utah Radiation Control regulations. The precipitate also passed the TCLP test with non-detect levels for all metals. Because the treatment chemistry of the proposed water treatment system is the same as the previous system, it is anticipated that the precipitate will be of similar composition as the material currently present in the former settling pond. As discussed in Section V, Reclamation Plan, the collected precipitate will be tested prior to disposal to determine the appropriate disposal method.

III.A.4 Contingency Pond

The existing lined pond will be converted into a Contingency Pond. This pond will be cleaned out, inspected, leak tested, and repaired. If the Water Treatment Plant experiences an upset condition, the overflow from the system will be directed to a concrete sump within the treatment building that drains into the Contingency Pond. The Contingency Pond can also be used to temporarily hold untreated water if the Untreated Water Pond is taken out of service for repairs or other reasons. The Contingency Pond will not hold untreated water during typical day-to-day operations. The Contingency Pond may also be used to hold treated water for use during construction activities.

Cleaning and repair of the Contingency Pond will be conducted following construction of the Water Treatment Plant, Untreated Water Pond, and Filter Pad. The Contingency Pond is constructed with a single synthetic liner and currently contains a small amount of stormwater and precipitate from previous treatment operations. The pond will first be emptied and cleaned using water sprays and pumps. The water and precipitate will be transferred to the Untreated Water Pond. Following cleaning of the pond, the pond liner will be inspected and tested for integrity and repaired, as necessary. The capacity of the contingency pond is approximately 1 million gallons, not including 2 feet of freeboard. Refer to Appendix E for pond design plans and specifications.

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III.B Ore Pad

The existing ore pad will be expanded and regraded to drain to a new sedimentation pond, to be constructed west of the ore pad and northeast of the existing ventilation shaft. The existing Collection Pond (see Figure 4) will be filled in as part of ore pad expansion. The new sedimentation pond will be located outside of the existing surface disturbance area.

The ore pad will serve as a temporary ore storage location prior to shipment to an off-site mill. The maximum capacity of the expanded ore pad is approximately 22,400 cubic yards, or 30,200 tons. However, the ore pad has been designed for possible future expansion of the underground workings onto neighboring properties, where known and inferred reserves exist. For this reason, the ore pad was designed to be large enough to accommodate up to six segregated ore piles, necessary to separate ore and royalties from the separate properties. The larger pad area also allows for storage and blending of different ore grades to meet mill shipping and feed requirements. Based on a scenario with six segregated piles, the cumulative capacity of the ore pad is 7,300 cubic yards, equivalent to 9,800 tons of ore. This is equivalent to 2 to 3 months of ore production at a full production rate of 200 tons per day.

Energy Fuels does not anticipate requiring more than 5,000 tons (3,700 cubic yards) of ore storage for several years. For this reason, Energy Fuels proposes to limit the cumulative ore stockpile size to 5,000 tons of ore and bond for the on-site disposal of this amount. At such a time that Energy Fuels requires more than 5,000 tons of ore storage, DOGM would be notified and the bond increased proportionately.

The ore pad will be graded and surrounded by earthen berms. All runoff from direct precipitation within the ore pad area will be directed to the sedimentation pond. Stormwater runoff outside of the ore pad will be diverted around the pad by the earthen berms. The sedimentation pond is

designed to contain the 10-year, 24-hour storm event and safely pass the 100-year, 24-hour storm event.

Prior to constructing the expanded ore pad and associated sedimentation pond, available topsoil will be salvaged and stockpiled. Approximately 12 to 18 inches of topsoil and growth media will be salvaged from the south end of the ore pad and the sedimentation pond area. This area encompasses approximately 1.5 acre, resulting in an estimated 3,000 cy of salvageable topsoil. The remainder of the ore pad has been disturbed by previous mining activities and does not contain salvageable topsoil. The topsoil will be stockpiled in topsoil stockpile TS-3, located immediately southwest of the ore pad and south of the ventilation shaft. Topsoil stockpile TS-3, with a height of 10 feet and 3H:1V side slopes has a capacity of approximately 3,000 cy. This stockpile will be seeded and surrounded by a low earthen berm to minimize losses of stockpiled topsoil by wind and water erosion. If additional topsoil can be salvaged, the topsoil stockpile will be expanded further to the west.

A small waste rock disposal area is located north of the treatment system area. This waste rock lies outside of the disturbed area delineated in the 2003 site survey, but the material appears to have been placed there during previous mining operations that post-date the effective date (1977) of the Utah Mined Land Reclamation Act. The sandstone material from this waste rock area and excess soils from the water treatment area will be used in the construction of the ore pad. Material used in construction of the ore pad will only include material that is not otherwise suitable as growth media. Energy Fuels will reclaim the waste rock area concurrently with construction of the ore pad. Refer to Section V for reclamation plan details.

Uranium ore and waste rock will be moist coming out of the mine and will be immediately transferred from the hopper to the loading bins located on the north side of the headframe. The waste rock will be loaded onto an on-site truck for transport to the waste rock disposal area located in the southwest corner of the surface facilities area. The ore will be loaded into a highway haul truck for direct shipment to the mill or into a smaller on-site truck or loader for placement on the ore pad. The stockpiled uranium ore will then be loaded, at a later time, into highway haul trucks using a front-end loader. If the ore should dry out prior to loading, the stockpile will be sprayed with water to minimize the amount of dust generated during loading operations. Water sprays will be applied only to the extent necessary to moisten the ore and ore pad area.

A tarpaulin (or other suitable cover) will be placed over the entire ore shipment and adequately secured so that release of fine ore particles into the air is minimized during transport. Prior to

leaving the site, the loaded truck will be surveyed for potential ore spillage and radiation. The truck will be scanned to verify that it meets gamma exposure rates stipulated in Title 49 of the U.S. Department of Transportation regulations.

III.C Groundwater Monitoring System

Ten groundwater-monitoring wells have been installed on site and are currently being monitored on a quarterly basis by Energy Fuels. Monitoring consists of measuring water levels, purging the wells, and collecting samples for analysis of the major ions, metals, and radionuclides. The monitoring results are being used to better define baseline conditions for the Groundwater Quality Discharge Permit with DWQ. Approval of this permit is needed prior to placing the two lined ponds (i.e., the Untreated Water Pond and the Contingency Pond) into service. A Construction Permit for the ponds was previously approved by DWQ on September 15, 2008. Energy Fuels submitted the Groundwater Discharge Permit application to DWQ with copies to DOGM on October 31, 2008 after the 5th quarter monitoring results became available. DWQ has verbally indicated that they will be issuing a draft Ground Water Quality Discharge Permit for public comment in February 2009.

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Five of the monitoring wells (HMW-1 through HMW-5) were installed during previous mining operations and are located around the perimeter of the treatment system area. Four additional monitoring wells (MW-1, MW-2B, MW-3, and MW-5) are located in the vicinity of the ore pad and one additional monitoring well (MW-4) is located south of the mine facilities area. Energy Fuels installed the latter five monitoring wells in July 2007. Permits from the State Engineer's Office and well construction logs for these wells are provided in Appendix H. Appendix H also contains a typical construction log for the older wells along with current well depth and water level information. The locations of all of the monitoring wells are shown on Figures 4 and 5.

IV. Impact Assessment (Rule 647-4-109)

Rehabilitation and proposed upgrades to the Energy Queen Mine site have been designed to increase mine efficiency and improve protection of the environment and public health. As discussed below, mitigation measures have been implemented to minimize impacts to surface water, stormwater, groundwater, wildlife, soil and vegetation, air quality, and cultural resources. Habitat that could potentially support threatened, endangered, or candidate species is not present at the site.

IV.A Surface Water Discharge

As discussed in Section III.A, Energy Fuels has obtained a water discharge permit from the Utah DWQ for discharging treated mine water to the adjacent ephemeral drainage. The proposed mine water treatment system is designed to meet the surface water discharge standards set forth in the discharge permit. This treatment system uses methods that have proven effective in treatment of radium in water. Refer to Appendix C for the discharge permit and Appendices D and E for the design plans and specifications for the treatment system.

IV.B Stormwater

Stormwater discharge from the Energy Queen Mine site is permitted in the same UPDES permit that allows for surface water discharge (see Appendix C). Energy Fuels has developed a site-specific industrial Stormwater Pollution Prevention Plan (SWPPP) to address and maintain stormwater pollution prevention measures. The SWPPP, which is included as Appendix I, addresses the following topics:

- Facility Information
- Potential Pollutant Sources
- Spills and Leaks
- Non-Storm Water Flows
- Storm Water Measures and Controls
- Inspections and Monitoring

Potential stormwater pollutant sources associated with the mine site include haul roads, ore pads, waste rock disposal areas, topsoil stockpiles, chemical storage, and explosives storage. The potential pollutants entering the stormwater discharged will be minimized by employing structural and non-structural best management practices (BMPs).

Structural BMPs to be utilized include the following:

- Sediment and erosion controls such as silt fence, straw wattles, erosion control blankets, vegetation, rip-rap inlet and outlet protection, check dams, preservation of existing vegetation, revegetation, and vegetated buffers
- Management of stormwater by use of properly designed drainage structures (e.g., ditches, berms, culverts, sedimentation ponds)
- Mine water treatment system

Non-structural BMPs include:

- Good housekeeping
- Preventative maintenance
- Spill prevention and response procedures
- Inspections
- Employee training
- Recordkeeping and internal reporting procedures

Stormwater inspections will occur on a monthly, quarterly, and annual basis. Monthly BMP inspections will include a visual site inspection of potential pollutant sources and structural BMPs. Quarterly visual monitoring will include collecting a stormwater sample and visually inspecting the sample for pollutants. In addition to a visual examination of stormwater samples, the stormwater samples will be analyzed on a quarterly basis in 2009 and 2011 for chemical oxygen demand, total suspended solids, and nitrate/nitrite in accordance with the UPDES permit. Annual comprehensive site compliance evaluations will address potential pollutant sources and BMPs and will specifically seek ways in which the stormwater control system and the SWPPP can be improved. Records of inspections and evaluations will be kept on-site for review by the Utah DWQ for a minimum of three years.

During rehabilitation of the mine site, Energy Fuels will be conducting minor work in the dry wash running through the site. This work will include removal of the small pile of waste rock that encroaches on the dry wash (north of the water treatment area), repair of eroded areas in the dry wash, and improvement of the road crossing leading to monitoring well MW-4 with a culvert. This work is addressed in a joint Stream Alteration Permit and Nationwide Permit application. Energy Fuels recently received approval to make these improvements, which are expected to reduce the level of suspended solids in stormwater runoff. See Appendix J for the application and approval letter.

Chemicals that will be located on-site that have the potential to contaminate stormwater include those used in the treatment plant, the mine shop, and the fueling station. The Chemical Storage and Handling Plan addresses stormwater pollution prevention for those chemicals used in the treatment system. The Spill Prevention, Control, and Countermeasure (SPCC) Plan address

potential stormwater pollution prevention of petroleum products used in the mine shop and fueling station including diesel fuel, gasoline, used oil, and engine coolant. Explosives at the Energy Queen Mine will be stored and used underground and will not be exposed to stormwater. Refer to Appendices G and K for the Chemical Storage and Handling Plan and the SPCC Plan, respectively.

An SPCC Plan is not required for this site under U.S. Environmental Protection Agency rules at the current time because less than 1,320 gallons of petroleum products are currently stored on-site in aboveground containers of 55 gallons or greater. However, Energy Fuels anticipates that additional storage capacity will be added as the mine is further developed and that the 1,320-gallon threshold will eventually be exceeded. The SPCC Plan will be updated and revised as oil storage is increased and/or modified.

IV.C Groundwater

The groundwater system at the site was previously characterized by Umetco Minerals Corporation (Umetco) in 1990 to 1991 as part of their Groundwater Discharge Permit application. The study found that the site is underlain by the following sequence of soils and geologic units, starting at the surface with nominal unit thickness shown in parenthesis:

1) gravels and sands (30 feet)
2) Dakota and Burro Canyon sandstones and interbedded mudstones (200 feet)
3) Brushy Basin massive mudstones with thin interbedded sandstone lenses (450 feet)
4) Salt Wash sandstones and interbedded mudstones (ore zone)

The closest groundwater to the surface consists of a small amount of perched water at the base of the sand and gravel unit. This water, which is present where the sand and gravel unit overlays a gray Dakota shale (sometimes mistaken for Mancos shale), is of relatively poor quality and unusable because of its limited volume and slow recharge. In other areas of the site, where the shale layer is not present, the closest water to the surface is found within sandstone lenses in the Dakota/Burro Canyon unit. Useable water is encountered from about 120 to 220 feet below surface in the Dakota/Burro Canyon unit. This water does not meet all secondary water quality standards, but can be treated for potable use. The deeper Brushy Basin and Salt Wash sandstones also contain water, but the water quality degrades at depth due to the mineralized nature of these Morrison Formation units.

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The water treatment area is underlain by the gray shale unit and there is a limited amount of perched water present at an average depth of about 40 feet below ground surface. The pond

liners, leak detection system, and monitoring wells are designed to ensure that this shallow underlying aquifer is not adversely impacted by untreated mine water that contains elevated levels of radium. Energy Fuels submitted the Groundwater Discharge Permit application to DWQ and DOGM on October 31, 2008. This application incorporated and built upon the background information previously collected by Umetco and is included as part of this amendment to the Mining and Reclamation Plan. The Ground Water Discharge Permit issued by the WQD will establish monitoring protocols and water quality standards for point-of-compliance monitoring wells.

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IV.D Threatened, Endangered and Candidate Species

Additional surface disturbance at the mine site will encompass only a small incremental area that does not contain habitat critical to Threatened, Endangered, and Candidate (TEC) vegetation wildlife species. According to the Utah Division of Wildlife Resources (DWR) website, there are currently five endangered, two threatened, and one candidate species found in San Juan County, Utah. The information obtained from the DWR website is presented in Appendix L and summarized in Table 3 below.

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Table 3
Threatened, Endangered, and Candidate Species

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Common Name	Status	Habitat
Plant Species		
Navajo Sedge	Threatened	Small area in southeastern Utah, approximately 70 miles from site
Fish Species		
Humpback chub	Endangered	Whitewater areas in Colorado, Green, and White Rivers
Bonytail	Endangered	Eddies, pools, and backwaters near swift current in large rivers
Colorado pikeminnow	Endangered	Medium to large rivers
Razorback sucker	Endangered	Slow backwater habitats and impoundments
Bird Species		
Yellow-billed cuckoo	Candidate	Lowland riparian areas
Mexican spotted owl	Threatened	Steep walled rocky cliffs
Southwestern willow flycatcher	Endangered	Dense riparian areas

The Navajo sedge is found only in a limited area in San Juan County, located approximately 70 miles from the mine site. The four fish species are limited to medium to large rivers. These

habitats are not located on or near the mine site. The Mexican spotted owl nests in steep-walled cliffs, also not found on the mine site.

The yellow-billed cuckoo and southwestern willow flycatcher nest in riparian habitats. There is a riparian area located downstream (west) of the mine surface facilities within the ephemeral drainage. The closest new disturbance (i.e., Topsoil Stockpile TS-3) to this riparian area is located more than 500 feet away. Surface water discharge to the drainage is expected to enhance the riparian habitat in these downstream areas.

IV.E Wildlife

The Untreated Water Pond will be fenced with a 6-foot high wire fence, similar to the one around the existing Contingency Pond, to prevent wildlife and livestock from entering the pond area and possibly becoming trapped in the bottom of the lined pond. The pond is large enough (about 1 acre) that birds and bats can drink easily from the surface without becoming trapped. The untreated water has a near neutral pH and meets agricultural standards (see Rule R317-2) with the exception of radium-226 and 228, which could reach levels as high as 40 picoCuries per liter (pCi/L). Energy Fuels proposes to monitor the pond for bird activity and mortality, if any. The pond will be netted or covered with bird balls if it is determined that it is detrimental to wildlife.

IV.F Soil and Vegetation

Topsoil and growth media, where present, will be salvaged from all areas to be disturbed. The topsoil/growth media will be placed in Topsoil Stockpiles TS-2 and TS-3 and seeded to minimize erosion and growth of weeds. Soil samples collected from the treatment pond and ore pad areas indicate that the soil is a clay to a clay loam (see Appendix M). The soil is adequate for plant growth, but generally low in some nutrients.

There are two primary vegetation types on site; piñon-juniper and northern desert shrub. The piñon-juniper habitat is located along the low ridge south of the ore pad and the mine buildings and north of the waste rock disposal area. This area has an overstory of piñon and juniper trees and an understory of grasses including gramas, bromes, fescues, junegrass, mountain muhly, galleta, western wheatgrass, and Indian ricegrass. The desert shrub habitat is located in the lower areas of the site on either side of the low ridge. This habitat is dominated by big sagebrush except in disturbed areas where rubber rabbitbrush is more common. Other species include fourwing saltbrush, prickly pear cactus, snakeweed, galleta, Indian ricegrass, bromes and fescues.

The areas of new disturbance on the west end of the site near the ore pad are transition zones from desert shrub to piñon-juniper habitat. The new disturbance associated with construction of the emergency spillway is located in piñon juniper habitat. Please see the photographic log provided in Appendix A for examples of the vegetative habitats at the areas of new surface disturbance. Long-term impacts to soil and vegetative resources are expected to be minimal as the soil will be saved for reclamation and the reclaimed surfaces will be seeded. At the recommendation of DOGM, a revised seed mix is presented in Section V, Reclamation Plan, that is designed to provide for a permanent and diverse vegetative cover after reclamation.

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IV.G Air Quality

Energy Fuels calculated estimated air emissions as a result of mining operations using EPA emission factors and AP-42. Energy Fuels conservatively estimated effectiveness of controls and mining activities to calculate the largest potential air emissions. Based on these emission calculations, the Energy Queen Mine is exempt from filing an air pollution emission notice as a small source under Utah Division of Administrative Rules (DAR) R307-401-9. Energy Fuels received a "small source exemption" determination from Utah Air Pollution Control Division on September 4, 2008. This determination and the air pollution estimations can be found in Appendix N.

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Energy Fuels plans to implement the following controls to limit air pollution.

- Use of low-sulfur diesel fuel
- Keeping ore and waste rock moist during loading and unloading operations
- Seeding and vegetation of topsoil stockpiles
- Chemical treatment of unpaved roads

IV.H Cultural Resources

Energy Fuels contracted with Abajo Archeology to perform a cultural resource inventory of all portions of the mine site that are currently disturbed or are anticipated to potentially be disturbed at this time. This survey also included a corridor survey of the ephemeral drainage throughout the length of the property so that future crossings of the drainage for mining or exploration purposes can avoid culturally significant sites.

The cultural resource inventory resulted in the identification and documentation of one archeological site. The site, identified as 42Sa27352, has been evaluated as being eligible for nomination to the National Register of Historic Places. Abajo Archeology recommended that the site be avoided and Energy Fuels concurs. The site is not within the proposed mine expansion or exploration drilling areas and Energy Fuels will maintain a minimum 100 feet of buffer around

the perimeter of the site. If future expansion of the mine facility encroaches on the site area, the area will be fenced or otherwise permanently marked to limit the potential for expansion to impact the site area. Based on the above avoidance and protection measures, a determination of "no effect" was requested from the Utah State Historic Preservation Office (SHPO). The cultural resource report is included as Appendix O to this amendment. Energy Fuels requests that this report be placed in a confidential file where it can be reviewed on a need-to-know basis.

The current work within the ephemeral drainage was approved by the Utah Division of Water Rights with the following stipulation regarding cultural resources: "If historical or archeological resources such as human remains (skeletons), prehistoric arrowheads/spear points, waste flakes from stone tool production, pottery, ancient fire pits, historical building foundations/remains, historical artifacts (glass, ceramic metal, etc.) are found during construction, the permit holder is advised to cease work and contact the Division of State History at 801-533-3555." Should Energy Fuels staff observe these or any other items of potential cultural significance on the mine site, work that may potentially threaten those locations will be stopped until such a time that a qualified professional, in consultation with SHPO, can determine its significance and recommend any avoidance or treatment measures that may be required.

V. Reclamation Plan (Rule R647-4-110)

The Energy Queen Mine site will be reclaimed as dry rangeland following mine operations. Where possible, land will be reclaimed to pre-mining contours. In situations where pre-mining contours cannot be attained, the area will be contoured to be free draining and blend in with the surrounding topography. Figure 7 shows the reclaimed topography in the areas addressed in this amendment (i.e., Water Treatment and Ore Pad areas). After the disturbed areas have been regraded, any compacted areas will be ripped to a depth of 18 inches, the available topsoil will then be placed over the top of the regraded area, and the soil will be seeded using a drill seeder and/or broadcast methods. If drill seeded, the seed will be applied at one-half the specified rate per acre. If the seed is broadcast the same day as ripping, it will not need to be raked into the soil. This is the preferred method. If the seed is broadcast in the days following ripping, the seed should be lightly raked into the soil. At the request of DOGM, the following revised seed mix has been established for site reclamation.

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Table 4
Reclamation Seed Mix

Common Name	Species Name	Rate* (lbs/ac. PLS)
Hycrest crested wheatgrass	*Agropyron cristatum*	0.5
Luna pubescent wheatgrass	*Agropyron tricophorum*	1.5
Boizoisky russian wildrye	*Elymus junceus*	1.0
Indian ricegrass	*Oryzopsis hymenoides*	2.0
Ladak alfalfa	*Medicago sativa*	1.0
Thickspike wheatgrass	*Elymus lanceolatus*	1.0
Palmer penstemon	*Penstemon palmerii*	0.5
Small burnett	*Sanguisorba minor*	1.0
Wyoming big sagebrush	*Artemisia tridentata wyomingensis*	0.2
4-wing saltbush	*Atriplex canescens*	2.0
Rubber Rabbitbrush	*Chrysothamnus nauseosus*	0.5
Forage Kochia	*Kochia prostrata*	0.5
	Total Seed	**12.2**

* Rate is recommended for broadcast seeding and can be halved for drill seeding.

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Details regarding the reclamation of the water treatment area, ore pad area, monitoring wells, north waste rock disposal area, and topsoil placement follow.

V.A Water Treatment Area

At the conclusion of mining, the Contingency Pond and Untreated Water Pond will be cleaned using high-pressure water hoses. The water will carry any residual sediment and precipitate to

the plant where the solid will be removed in the multimedia filters and the treated water will be discharged. Since the liners are essentially inert, Energy Fuels will request approval from the Utah Division of Solid and Hazardous Waste and San Juan County to bury the synthetic liners in place by cutting the sides and folding them in on the bottom liner. During subsequent regrading, the liners would be buried to a depth of three feet or more. If this approach is not accepted by the State and/or County, the liners would be cut into sections using an electric saw and other hand tools and then hauled to a standard municipal landfill for disposal.

The chemical precipitate collected in the geomembrane fabric bladders will be analyzed to determine the appropriate disposal method. Based on the analytical results of the treatment precipitate in the existing lined pond, Energy Fuels expects that this material will contain NORM levels of radioactivity, similar to that observed in the waste rock (see Section III.A.4). If this is the case, Energy Fuels will request approval from DOGM to incorporate the dried solids into a pit excavated within the waste rock area. If the radium and/or uranium levels are higher than NORM, the material would be either shipped to a mill for recovery of the uranium or disposed of at a suitable landfill.

The water treatment building and equipment will be dismantled and the foundation of both the building and Filter Pad will be demolished. The water treatment equipment will be cleaned prior to dismantling and the equipment, building materials, pipes, electrical conduit, etc. will be recycled and/or disposed of in a municipal landfill. The concrete, which is inert material, will be broken into pieces of three feet or less and placed in the bottom of the Contingency Pond for burial during regrading. The water treatment system is located in an area that was excavated for gravel quarrying prior to previous mining operations. The shallow pits created by the gravel operation were utilized during previous mining operations as infiltration and lined treatment ponds. Because a large volume of material was removed from this area during gravel quarrying, reclamation to original contours is not possible; however, the ponds can be regraded to be free draining. As shown on Figure 7, the land surface of the treatment system area will be contoured as a large swale, draining from the east to the west toward the existing dry wash. These contours are based on a balanced cut and fill grading scenario. The bottom slope of the swale will average approximately 5 percent and the side slopes of the swale will be approximately 1 percent. Topsoil, stockpiled during construction of the treatment system will be spread over the disturbed area and seeded. Additional fine-grained growth media encountered during regrading will also be segregated and utilized to augment the limited volume of topsoil that is currently available.

V.B Ore Pad

Any remaining ore on the ore pad will be shipped to a uranium mill for processing prior to reclamation activities. As a contingency plan in the event that the remaining ore cannot be shipped to a uranium mill for any reason, the ore will be disposed of on-site. Up to 4,500 cubic yards of ore may be placed into the mine shaft at closure. Energy Fuels plans to limit cumulative ore storage on the ore pad to 5,000 tons (3,700 cubic yards) and has calculated an estimated cost for this scenario (see Part VII and Appendix P). Energy Fuels anticipates that this level of storage will be adequate for at least several years of operation. At such a time that more ore storage is required, Energy Fuels will notify DOGM and the reclamation bond will be adjusted accordingly.

Alternatively, the remaining ore could also be placed in the waste rock area and covered with a minimum of four feet of waste rock and topsoil during reclamation. This option would be preferable if the owner and/or operator desires that the shaft be left in a condition that would allow for future reopening.

Sediment that has collected in the sedimentation pond and the top one foot of material on the ore pad will be excavated and placed in the waste rock disposal area. This material will be sampled and analyzed to verify that it is NORM prior to excavation and placement. Any material exhibiting elevated radioactivity or uranium concentrations will be shipped with the ore to the mill for processing or disposed of within the mine shaft. By removing the ore pad material, it is hoped that finer-grained subsoils will be uncovered in some areas that can support adequate vegetative growth. The ore pad area will be ripped and graded to loosen the soils and provide an undulating, free draining surface. Sharp edges will be smoothed and the berms surrounding the ore pad will be pushed down and used as fill material, where needed, to tie the pad into the surrounding terrain. The overall drainage pattern to the west-northwest will be maintained as shown on Figure 7. The sedimentation pond will be filled in with the material used for earthen berm construction around the pond. Topsoil, stockpiled during the expansion of the ore pad and construction of the sedimentation pond will be spread over the disturbed areas and seeded.

V.C Groundwater Monitoring System

There are currently ten monitoring wells located at the Energy Queen Mine site. The five monitoring wells located in the treatment system area (HMW-1, 2, 3, 4, and 5) range in depth from 30 to 48 feet and are 4-inches in diameter. The remaining five wells range in depth from 42 feet at Well MW-4 to 150 feet at Well MW-1 and are 2 inches in diameter. At the conclusion of mining, a certified well driller will properly abandon the ten wells in accordance with Rule R655-4. A cement grout or equivalent low permeable material approved in Rule R655-4 (e.g., bentonitic slurry, bentonite pellets) will be used to plug the wells. The shallower wells can probably be abandoned by pulling the casing out and, at the same time, grouting the well from the bottom up. Any wells where the casing cannot be removed will be grouted in place with a minimum of two feet of casing cut off below the ground surface. Soil will then be backfilled over the top of the casing.

Nine of the ten monitoring wells are located within larger areas of surface disturbance and will not require additional reclamation costs after abandonment. Monitoring well, MW-4, and an associated access road are located south of the mine facilities area and outside of the primary surface disturbance area. It is likely that the landowner will want to retain this road for the post-mining land use; however, its reclamation is described here in the event that this does not occur. Reclamation of this area would include ripping of the road and pad and seeding. The road crossing over the ephemeral drainage would also be eliminated by removing the culvert and surrounding fill material and then reshaping the banks to match the upstream and downstream banks.

V.D North Waste Rock Disposal Area

A small waste rock disposal area, located north of the treatment system area, will be reclaimed concurrently with the expansion of the ore pad. Although this waste rock disposal area was approved in the 1978 Mining and Reclamation Plan (see strikeouts in Appendix B), its location on the side of an ephemeral drainage is problematic. Approximately 2,100 cubic yards of waste rock are located in this disposal area. Energy Fuels will excavate this material and use it to fill in the collection pond located immediately south of the current ore pad. The excavated area will then be graded to match the surrounding drainage embankments, scarified, and seeded.

V.E Topsoil Stockpile Volumes

Topsoil will be salvaged wherever practicable and stockpiled for future reclamation during the construction of the water treatment and ore pad improvements. As discussed in Section III,

Energy Fuels estimates that a total of 4,600 cubic yards of topsoil and growth media will be stockpiled during this construction. The corresponding area that will need to be reclaimed is about 9 acres, which would only allow for the placement of an average of 3.8 inches of topsoil/growth media. As discussed earlier, the topsoil shortage exists because topsoil was not salvaged historically when the area was quarried for gravel.

Energy Fuels plans to augment the stockpiled topsoil over time as opportunities present themselves. For example, if the waste disposal area is expanded in the future, 18-inches or more of topsoil could be stripped from the expansion areas. There are also piles of soil material left over from historic gravel operations in the area north of the treatment plant. Some of these soils may be adequate for use as growth media and, if so, they could be easily excavated and placed as soil cover over portions of the water treatment area during future reclamation. It is Energy Fuel's goal to place at least 6 inches of topsoil/growth media over the entire site during reclamation.

VI. Variance (Rule R647-4-112)

No variances to DOGM regulations are required or requested at this time.

VII. Surety (Rule R647-4-113)

The existing reclamation bond estimate was prepared by Union Carbide and submitted to the Division in December 1983 (see Appendix P). This estimate was for $117,800 and included the following reclamation tasks over a "35-acre" site.

A. Removal of surface structures
B. Removal of trash and debris
C. Removal and burial of foundations
D. Restocking of unused fuels, oils, etc.
E. Contouring of the pond area (6.6 acres)
F. Contouring of waste dumps (11.2 acres) and plant area and roads (17.2 acres)
G. Topsoil Placement and grading on waste dumps (11.2 acres)
H. Capping of vertical shafts (6)
I. Stabilization and reseeding of ponds, waste dumps, plant area, etc. (35 acres)
J. Monitoring, sampling and testing
K. Contingency, 10%

Since that time, the estimate has been increased to account for inflation. The current bond, which will be up for a 5-year review in 2010 is $265,200. Because the current modifications are relatively minor, Energy Fuels proposes to increase the bond amount to account for those items that were not included in the original estimate. Given that the original estimate covers a 35-acre area and that only 25.6 acres of disturbance are proposed at this time, it appears that all earthwork and seeding activities are adequately covered in the bond. Similarly, the estimate includes the capping of six shafts while only two currently exist. The following water treatment related items have been identified as not being included in the 1983 estimate.

1. Demolition of the water treatment plant including landfill disposal of associated debris
2. Breaking of the treatment plant and filter pad foundations with burial on site
3. Cleaning, cutting, and hauling pond liners to a municipal landfill
4. Disposal of the filter pad precipitate in the waste rock disposal area
5. Abandonment of 10 monitoring wells
6. Contingency disposal of stockpiled ore

An incremental bond estimate that includes these six items is presented in Appendix P. The estimate totals $54,600 in 2010 dollars, which would bring the total bond amount up to $319,800.

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APPENDIX I
STORMWATER POLLUTION PREVENTION PLAN

To La Sal Junction
(approx 5 mi)

R 24 E

T 28 S

T 29 S

Sec 31

Sec 32

Sec 6

Sec 5

1 / 3.7

EMERGENCY OVERFLOW - COLLECTION POINT #3

SEDIMENTATION POND

2 / 2.3

ORE PAD

EARTHEN BERM

TOPSOIL STOCKPILE #1

3

WASTE ROCK

COLLECTION POINT #2

4 / 1.5

5 / 3.1

EARTHEN BERM

TREATED WATER DISCHARGE POINT

DISCHARGE PIPE

CONTINGENCY POND

EMERGENCY OVERFLOW

UNTREATED WATER POND

EMERGENCY OVERFLOW PIPE

WASTE ROCK

6 / 4.7

WASTE ROCK

WASTE ROCK

TOPSOIL STOCKPILE #2

8 / 11.4

TOPSOIL STOCKPILE #3

EARTHEN BERM

STORMWATER DISCHARGE - COLLECTION POINT #1

7 / 3.4

R 24 E

True North

13° MN

100 50 0 100 200

SCALE IN FEET

Contour Interval = 40 Feet
from USGS 7.5 minute Quadrangle sheet
La Sal West, Utah
Provisional Edition 1987

LEGEND

- Crest and Toe of Slopes
- Access Roads
- Highway (From USGS Topo)
- Existing 2-Track Road (From USGS Topo)
- Power Line and Pole
- Channelized Flow
- Culvert
- Surface Sheet Flow
- Fence
- Drainage Basin Boundary
- 7 / 3.4 Drainage Basin ID / Drainage Area (ac)
- Rip Rap
- Disturbed Area Boundary

Note:
This Map is based on Hecla Shaft Permit M/037/043 drawing by IUSA dated April 10, 2003.

Energy Fuels Resources

FIGURE SWPPP-3
ENERGY QUEEN MINE
SURFACE DRAINAGE MAP

Scale	Revised	Drawn by
1"=200'	August 2, 2008	ZTR

APPENDIX N
AIR QUALITY EVALUATION

State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY HERBERT
Lieutenant Governor

Department of
Environmental Quality

Richard W. Sprott
Executive Director

DIVISION OF AIR QUALITY
Cheryl Heying
Director

Small Source Registration

DAQE-EN0141340004-08

September 4, 2008

Zack Rogers
Energy Fuels Resources Corporation
44 Union Boulevard
Suite 600
Lakewood, CO 80128

Re: Request for Evaluation of Compliance with Rule R307-413-2, UAC: Exemptions and Special Provisions - Small Source Exemptions - De Minimis Emissions: Energy Queen Mine.
Project Fee Code: N014134-0004

Dear Mr. Rogers:

The Utah Department of Environmental Quality, Division of Air Quality (DAQ) has reviewed your letter, submitted May 12, 2008, requesting a small source exemption for Energy Queen Mine and determined that the small source exemption applies as long as the above- referenced equipment and associated processes are operated as specified in the Registration Request.

The small source exemption does not exempt a source from complying with other applicable Federal, State, and local regulations and the current Utah Administrative Code. If you change your operation such that there is an increase in the emissions submitted to DAQ, it is recommended that you notify us as an approval order may be required.

The fee for issuing the small source/de minimis designation is the cost, as authorized by the Utah Legislature of the actual time spent by the Review Engineer and all other staff on the project, and a one time filing fee. Payment should be sent to the DAQ upon receipt of the invoice.

Thank you for informing the DAQ of this process. If you have any additional questions, please contact Camron Harry at (801) 536-4232.

Sincerely,

M. Cheryl Heying, Executive Secretary
Utah Air Quality Board

Ty L. Howard, Manager
Major New Source Review Section

MCH:TLH:CAH:dn

Attachments: Small Source Exemption Registration Request and attached forms

APPENDIX P
INCREMENTAL RECLAMATION COST ESTIMATE

ENERGY QUEEN MINE
MINE PERMIT AMENDMENT RECLAMATION COST ESTIMATE
PERMIT No. M/037/043

1.0 INTRODUCTION

This reclamation cost estimate is based on a conservative scenario in which the mine is developed to the full extent of the Mine Permit Amendment. It is assumed that salvageable items of value such as the generators, air compressors, and mobile equipment have been removed from the site. The estimate is based on unit costs presented in the 2008 RS Means Heavy Construction Cost Data handbook, and the reclamation plan requirements detailed in the Mine Permit Amendment for the project. This approach is consistent with guidance provided by the Utah Division of Oil, Gas and Mining (DOGM).

Deleted: , the 2004 RS Means Environmental Remediation Cost Data - Unit Price Data handbook,

Unit prices from the RS Means handbook, are summarized in the attached Means Cost Data sheet. These prices include the contractor's overhead and profit; therefore, these items are not included as separate line items in the estimate. Each unit price is referenced to both the section and page number where it can be found in the handbook. The unit prices have not been adjusted for location because all of the Utah cities referenced in the handbooks are either slightly above or below average for the country.

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RS Means prices have been adjusted to account for site-specific conditions in those cases where the assumptions used to develop the RS Means prices were significantly different than those proposed in the Mine Permit Amendment. The hours for performing other miscellaneous tasks such as cleaning of the water treatment plant equipment and cleaning and cutting of the pond liners were estimated based on past experience. These hours were then multiplied by the RS Means unit prices for labor and equipment. All assumptions and estimates are clearly identified in this estimate.

Costs for rough grading, fine grading, and revegetation of the new disturbed areas have not been included in this cost estimate as they have been included in the existing posted reclamation bond for the Energy Queen Mine.

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The cost estimate and RS Means cost data sheet are divided into the following five closure and reclamation categories.

Water Treatment Plant Building and Equipment: Consists of cleaning of the water treatment plant and associated equipment (i.e. tanks, piping, pumps, etc.), fence removal, and disposal of the debris at an off-site landfill. Building demolition costs are based on the unit prices presented in RS Means cost data sheet and the in-place, intact volume of the structures to be demolished. Demolition debris will consist of metal siding, metal and wood framing, electrical wiring, fencing, and similar materials. Disposal costs are based on the disposal quantity being approximately one-third of the intact, in-place volume with an average density of 300 pounds per cubic yard.

Concrete Pads and Foundations: Consists of demolition and on-site disposal of the water treatment plant foundation and concrete filter pad. This material is inert solid waste and can be buried in the immediate area. Concrete pads and foundations will be broken up into five-foot-diameter sections or smaller and placed in the contingency pond area. The concrete will be buried with a minimum of three feet of backfill during final grading. Under Utah regulations, the concrete with incidental rebar or wire mesh meets the definition of inert waste and does not

require disposal in a permitted landfill. The concrete pad for the water treatment plant is 6 inches thick with wire mesh and/or rebar reinforcement and includes a 6-inch curb around all sides. The concrete filter pad is 12 inches thick with rebar reinforcement and includes a 2-foot curb on the northeast and southwest sides of the pad. Unit prices for breaking concrete and disposing of it onsite are listed in RS Means cost data sheet.

Pond Liners: Consists of cleaning and cutting the pond liners and disposing of them at the Moab landfill, located 28 miles from the mine site. The estimate includes removal of two liners from the untreated water pond and one from the contingency pond. The pond liners will be cleaned by washing down and pumping out the wash water. The pond liners will then be cut into pieces of approximately 10' x 40' and loaded onto a lowbed trailer for disposal at the Moab landfill. It is estimated that approximately 390 pieces of the liner will be cut and hauled to the landfill.

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Water Treatment Precipitate: Consists of loading, hauling and disposing of the water treatment precipitate on-site in the waste rock disposal area. Based on analysis of precipitate from the former treatment plant settling pond, this material is expected to be within NORM levels and similar to the waste rock in radium^{226} content. The precipitate will be contained within up to three geosynthetic fabric bladders with a capacity of 20 cubic yards each. The bladders may be contained within roll-off containers. However, it is conservatively assumed that the bladders will be located directly on the concrete filter pad. In this case, the bladders will be broken open and precipitate loaded into 8 cubic yard haul trucks. The precipitate will be placed in an excavation within the waste rock disposal area.

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Monitoring Well Abandonment: Consists of removal of monitoring well casing and screens, to the extent practical, and grouting of the holes in accordance with State requirements. Five of the monitoring wells, located in the water treatment plant area are 4 inches in diameter and range from 30 to 48 feet deep. The remaining five monitoring wells, which are located in the ore pad area and south of the mine facilities area, are 2 inches in diameter and range from 42 to 150 feet deep. All of the monitoring wells are constructed of PVC well casings and screens.

Deleted: It is conservatively assumed that the wells will be completely grouted with Portland cement

Ore Disposal: Any ore remaining on the ore pad will be sent to a uranium mill for recovery. However, if this is not possible due to market conditions or other reasons, the ore material will be dumped into the mine shaft using a front end loader. An estimated cost to load, haul and dump up to 3,700 cubic yards of ore (5,000 tons) from the ore pad to the mine shaft is included in the attached reclamation cost estimate. Alternatively, a mine operator may prefer to dispose of ore in the waste rock pile with 4 feet of waste rock and topsoil cover. This method of disposal would allow for reopening of the mine shaft in the future, although it is more expensive and is not required.

COST ESTIMATE SUMMARY

The attached reclamation cost estimate tables provide a summary of the estimated closure and reclamation costs by category. The contractor's overhead and profit have been included in the unit prices used for each category; accordingly, they are not listed as separate line items. Escalation to the year 2010 is also included based on an inflation rate of 4.44%, which has been historically used to account for escalation for the Energy Queen Mine. The total estimated incremental cost is $54,600. The estimate is considered to be conservative, as no allowance has been made for salvage values and the hourly operator and labor rates incorporated into the RS Means handbooks are generally higher than those paid by small to medium-sized construction companies in southeastern Utah.

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ENERGY QUEEN MINE
MINE PERMIT AMENDMENT RECLAMATION COST ESTIMATE
PERMIT No. M/037/043

Water Treatment Plant Building and Equipment			
Cleaning	Days	Unit Cost ($/day)	Estimated Cost ($)
	1	$750.57	$751
Building Demolition (14'x20' + 19'x25', 15' high, Sheet Metal with Wood Frame)	Volume (CF)	Unit Cost ($/CF)	Estimated Cost ($)
	11,325	$0.20	$2,265
	Length (LF)	Unit Cost ($/LF)	Estimated Cost ($)
Fencing Demolition, 6' high wire fence	1,440	$2.53	$3,643
	Weight (a) (ton)	Unit Cost ($/ton)	Estimated Cost ($)
Dump Fees - Bldg. Debris (Moab Landfill) (b)	21	$104.50	$2,192
Dump Fees - Equipment (Moab Landfill) (b)	13	$104.50	$1,359
		Subtotal	**$10,209**

Concrete Pads and Foundations						
Building/ Structure	Area (SF)	Pad Thickness (in)	Volume (CY)	Concrete Demo Unit Cost ($/CY)	On-site Disposal Unit Cost ($/CY)	Estimated Cost ($)
WTP Foundation and Curbs (14'x20' + 19'x25', 6" thick with rebar and 6" curbs)	~~838~~ 820	6	~~15.5~~ 15.2	$132.00	$8.80	~~$2,185~~ $2,138
Filter Pad (12" with rebar and 24" curbs)	2250	12	83.3	$132.00	$8.80	$11,733
						~~$13,918~~
					Subtotal	**$13,871**

Pond Liners			
Description	Days	Unit Cost ($/day)	Estimated Cost (d) ($)
Cleaning	2	$750.57	$1,501
Cutting	3	$1,736.40	$5,209
Hauling (Moab Landfill) (b)	1	$1,062.12	$1,062
	Weight ~~(b)~~ (c) (ton)	Unit Cost ($/ton)	Estimated Cost ($)
Dump Fees (Moab Landfill) (b)	14	$104.50	$1,442
		Subtotal	**$9,215**

Water Treatment Precipitate				
Description	Volume (CY)	Loading Unit Cost ($/CY)	Hauling Unit Cost ($/CY)	Estimated Cost ($)
Disposal in Waste Rock Disposal Area, 1/2 mi. round trip	60	~~$11.85~~ $1.65	$4.49	~~$980~~ $368

ENERGY QUEEN MINE
MINE PERMIT AMENDMENT RECLAMATION COST ESTIMATE
PERMIT No. M/037/043

Monitoring Well Abandonment				
Description	Well Diameter (in)	Well Depth (LF)	Unit Cost ($/LF)	Estimated Cost ($)
HMW-1	4	30	~~$32.42~~ $16.45	~~$1,080~~ $494
HMW-2	4	47	~~$36.42~~ $16.45	~~$1,742~~ $773
HMW-3	4	47	~~$36.42~~ $16.45	~~$1,712~~ $773
HMW-4	4	48	~~$36.42~~ $16.45	~~$1,748~~ $790
HMW-5	4	38	~~$36.42~~ $16.45	~~$1,384~~ $625
MW-1	2	150	~~$21.19~~ $16.45	~~$3,179~~ $2,468
MW-2B	2	85	~~$21.19~~ $16.45	~~$1,801~~ $1,398
MW-3	2	87	~~$21.19~~ $16.45	~~$1,844~~ $1,431
MW-4	2	42	~~$21.19~~ $16.45	~~$890~~ $691
MW-5	2	90	~~$21.19~~ $16.45	~~$1,907~~ $1,481
				~~$17,268~~
			Subtotal	**$10,923**

Ore Disposal			
Description	Volume (CY)	Load, Haul and Dump Unit Cost ($/CY)	Estimated Cost ($)
Disposal of Ore in Mine Shaft, 300 ft haul	3,700	$1.47	**$5,439**

TOTAL RECLAMATION COST	
Water Treatment Plant Building and Equipment	$10,209
Concrete Pads and Foundations	~~$13,918~~ $13,871
Pond Liners	$9,215
Water Treatment Precipitate	~~$980~~ $368
	~~$17,268~~ $10,923
Ore Disposal	$5,439
Escalation to 2010 dollars at 4.44% per year	~~$4,627~~ $4,541
GRAND TOTAL	~~$56,200~~ **$54,600**

ENERGY QUEEN MINE
MINE PERMIT AMENDMENT RECLAMATION COST ESTIMATE
PERMIT No. M/037/043

Notes:

Grading and revegetation costs for the entire site are included in the existing posted bond

(a) The weight of demolished materials was estimated to be 300 pounds per CY
(b) The Moab Landfill is located 28 miles from the Energy Queen mine site
~~(b)~~(c) Based on a liner area of 92,000 SF and density of 0.3 pounds per SF

CF cubic foot
CY cubic yard
in inch
LF linear foot
SF square foot

ENERGY QUEEN MINE
MINE PERMIT AMENDMENT MEANS COST DATA
PERMIT No. M/037/043

Reference:

- 2008 RS Means Heavy Construction Cost Data, 22nd Annual Edition, Kingston, MA.

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¶
Primary

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<#>2004 RS Means Environmental Remediation Cost Data – Unit Price, 10th Annual Edition, Azimuth Group, Ltd. and ECHOS, LLC ¶
¶

Water Treatment Plant Building and Equipment

A. Miscellaneous Costs (pg. 463) – Cleaning treatment plant equipment and pond liners
1 equipment operator (med); 0.5 laborer; 1 centr. water pump; 3", 1-20' suction hose, 3";
2-50' discharge hose, 3" (see Crew B-10J) = $750.57/day

B. Section 024116.13 Building Demolition (pg. 33)
0500: Small bldgs., or single bldgs. no salvage included, steel
= Crew B3, 14,800 cf/day, $0.30/cf
(includes 20 miles haul, dump fees not included)
5000: For buildings with no interior walls deduct 50%
= $0.20/cf

C. Section 024113.66 Selective Demolition, Misc Metal Fences and Gates (pg. 30)
0100: Misc steel mesh fences, 4'-6' high
= Crew B-6, 600 lf/day, $2.53/lf

D. Section 024119.19 Selective Demolition, Dump Charges (pg. 36)
0100: Building Construction Materials
= $104.50/ton

Concrete Pads and Foundations

E. Section 030505.10 Selective Demolition, Concrete (pg. 40)
0060: Break up into small pieces, Average reinforcing
= Crew B-9, 16 cy/day, $132/cy

F. Section 024116.17 Building Demolition Footings and Foundations (pg. 34)
4200: Add for disposal, on site
= Crew B-11A, 232 cy/day, $8.80/cy

Pond Liners

G. Miscellaneous Costs (pg. 463) – Cleaning treatment plant equipment and pond liners
1 equipment operator (med); 0.5 laborer; 1 centr. water pump; 3", 1-20' suction hose, 3";
2-50' discharge hose, 3" (see Crew B-10J) = $750.57/day

H. Miscellaneous Costs (pg. 473) – Cutting and loading pond liners
3 laborers; 1 equip. operator (light); 1 loader, skid steer, 30HP, gas
(see Crew B-62) = $1736.40/day

I. Miscellaneous Costs – Hauling Pond Liners (pg. 470)
1 truck driver (heavy); 1 truck tractor, 6x4, 380 HP; 1 lowbed trailer, 75 ton
(see Crew B-34K) = $1062.12/day

J. Section 024119.19 Selective Demolition, Dump Charges (pg. 36)
0100: Building Construction Materials
= $104.50/ton

Water Treatment Precipitate

K. Section 312323.15 Borrow, Loading and /or Spreading (pg. 224)
4020: Common earth, front end loader, wheel mounted, 3 cy bucket
= Crew B-10T, 1,575 bcy/day, $11.10/bcy including material ($9.45/bcy)
Cost without material = $1.65/bcy

L. Section 312323.18 Hauling (pg. 225)
0030: 8 cy dump truck, ½ mile round trip, 4.1 loads/hr
= Crew B-34A, 160 lcy/day, $4.49/lcy

Monitoring Well Abandonment

M. Section 024113.76 Selective Demolition, Water Wells (pg. 31)
0600: Well screen 2" to 8"
= Crew B-23, 300 vlf/day, $16.45/vlf

Ore Disposal

N. Section 312323.14 Backfill, Structural (pg. 223)
5400: 300 H.P., 300' haul sand and gravel
= Crew B-10M, 1500 cy/day, $1.47/cy

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Deleted: M 2004 RS Means Environmental Remediation Cost Data – Unit Price¶
. Section 33 23 Annular Seals¶
1822: Well Abandonment, 2" Well, Portland Cement Grout (pg. 9-247)¶
= Crew ULADB, 2.5 LF/hr, $18.11/LF. Adjusted to $21.19/LF with inflation of 4% for 4 years.¶
1823: Well Abandonment, 4" Well, Portland Cement Grout (pg. 9-247)¶
= Crew ULADB, 2.25 LF/hr, $31.13/LF. Adjusted to $36.42/LF with inflation of 4% for 4 years.¶